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**Plant Science Today**<http://horizonepublishing.com/journals/index.php/PST>**Research Article****Ethnobotanical information on some aquatic plants of South 24 Parganas, West Bengal****Rudrajit Chakraborty<sup>1</sup>, M. S. Mondal<sup>2</sup> and Sobhan Kr. Mukherjee<sup>1</sup>**<sup>1</sup>Taxonomy and Biosystematics Laboratory, Department of Botany, University of Kalyani, Kalyani, Nadia-741 235. W.B., India.<sup>2</sup>Central National Herbarium, BSI, Indian Botanic Garden, Howrah, West Bengal.*Article history*

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✉ [sobhankr@gmail.com](mailto:sobhankr@gmail.com)**Abstract**

District South 24-Parganas is surrounded by river Hoogly (Ganga) in the West, North 24 Parganas and Bangladesh in the East, the North 24- Parganas and Kolkata in the North and extended up to the fringes of Sundarbans approaching the Mangrove reserves towards Bay of Bengal. Quite naturally the district has an interesting combination of its people and at the same time its floristic composition. In course of the survey of Aquatic Flora of South 24- Parganas, West Bengal, the first authors had collected information regarding traditional use of some plants South 24- Parganas for the treatment of the common ailments; interacting with the local people particularly the ethnic people like Santals and some displaced families from Bangladesh and others. In the present paper, some commonly useable aquatic plants from different families have been enlisted with botanical name, traditional uses including ethno - veterinary application etc.

**Keywords**

Ethnobotany; Ethnomedicine; Aquatic plants; 24 Parganas(S); W.B.

**Introduction**

District South 24-Parganas is surrounded by river *Ganga* (commonly known as Hoogly River) in the West, North 24 Parganas and Bangladesh in the East, the North 24-Parganas and Kolkata in the North and extended up to the fringes of Sundarbans approaching the Mangrove reserves towards Bay of Bengal. Quite naturally the district has an interesting combination of its people and at the same time its floristic composition. Majority of the plants are typically terrestrial in comparison to the amphibious and hydrophytic ones. At one extreme there are xerophytes - which can withstand by periods of drought and flourish in minimal supply of water, and at the other are the hydrophytes - the water plants. Most aquatic plants inhabit

freshwater and swamps - the water may be stagnant or running, whereas a small group inhabit marine conditions. They are either free-floating individuals or rooted with emergent, leafy and reproductive shoots, whereas still others are completely submerged.

It is very difficult to define 'aquatic' plants exactly because aquatic habitats cannot be sharply distinguished from terrestrial ones (Sculthorpe, 1967). According to Muenschar (1944) hydrophytes are those species 'which normally stand in water and must grow for at least a part of their life cycle in water, either completely submerged or immersed'.

Phytosociological studies provide details on the composition, structure, species density and growth, trends of succession and characteristics of community.

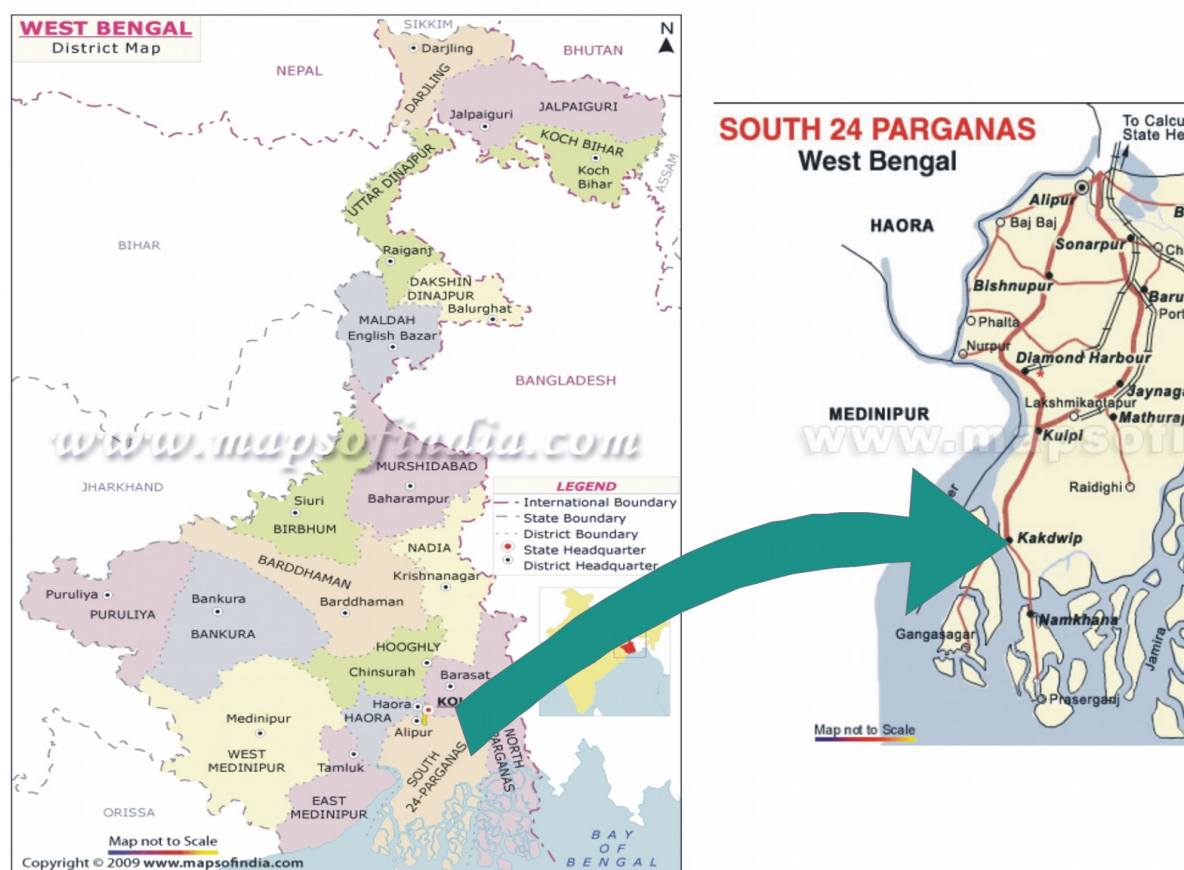


Figure 1: Map of West Bengal and 24 Parganas South

Table 1: Geographical location of the district of South 24 Parganas.

Name of the District	Lat.		Long.		Distr. Head Quarter	Lat.	
	N	S	E	W		N	E
South 24 Pargana	22°33'45"	21°29'	89°4'50"	88°3'45"	Alipore	22°32'	88°2'

Source: Director, National Atlas, Govt. of India

Table 2: Monthly rainfall in the district South 24 Parganas

Month	Normal (mm)	Actual (mm)				
		2008	2009	2010	2011	2012
January	12	0	8	0	27	0
February	19	0	54	1	0	17
March	38	0	0	27	21	35
April	53	1	64	51	51	20
May	139	240	204	107	107	125
June	267	221	275	368	368	368
July	348	411	471	210	210	308
August	202	557	207	374	374	256
September	282	653	258	219	219	172
October	166	232	102	91	91	410
November	57	0	2	84	84	11
December	14	0	0	0	0	32
<b>Total</b>	<b>1597</b>	<b>2315</b>	<b>1645</b>	<b>1792</b>	<b>1552</b>	<b>1754</b>

Source: Meteorological Department, Govt. of India

The works of Merlee and Avita (1989); Sheela and Hema (2004) and Sheela and Asha (2007) clearly bring out the importance of phytosociological studies in the present century. Rather than concentrating on floral characters, the study of

different taxa in relation to their ethnobotanical use is also gaining momentum. So in this paper, some commonly useable aquatic plants from different families of South 24 Parganas have been enlisted with botanical name, local or vernacular

**Table 3: List of aquatic plants with ethnomedicinal importance**

Name	Family	Plant parts	Etnomedicinal use
1. <i>Polygonum glabrum</i> Willd.	Polygonaceae	Leaf	Wounds, Colic pain
2. <i>Polygonum. barbatum</i> L.	Polygonaceae	Seed	Colic pain
3. <i>Polygonum. orientale</i> L.	Polygonaceae	Leaf	Wounds, good tonic
4. <i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Leaf	On snake bite
		Stem	Poisonous snake bite (pain)
		Tender shoot	Purgative
		Whole plant	Spasmolytic
5. <i>Limnophila indica</i> Druc.	Scrophulariaceae	Whole plant	Antiseptic, Elephantiasis, Fever,
			Dysentery
6. <i>Nelumbo nucifera</i> Gaerth.	Nymphaeaceae	Flower	Cardiac tonic for fever and disease of liver.
		Seeds	Cooling medium for skin diseases
		Rhizome	Piles
7. <i>Nymphaea stellata</i> Willd.	Nymphaeaceae	Root	Dyspepsia, Diarrhoea, Piles
		Flower	Heart palpitation
8. <i>Neptunia oleracea</i> Lour.	Mimosaceae	Whole plant	Astringent and cooling agent
9. <i>Hygroryza aristata</i> Nees.	Poaceae	Seeds	Cooling agent and astringent to urinary tract, uses in biliousness
10. <i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	Whole plant	Cooling agent, uses in biliousness, Scorpion sting.
11. <i>Vallisneria spiralis</i> L.	Hydrocharitaceae	Leaf	Stomach pain, Leucorrhoea
12. <i>Monochoria hastata</i> (L.) Solms.	Pontederiaceae	Leaf	Used as tonic, cooling agent for Curing boils.
13. <i>Monochoria vaginalis</i> Presl.	Pontederiaceae	Root	Toothache, Asthma
14. <i>Typha angustata</i> Chaub & Bory.	Typhaceae	Root	Astringent and Diuretic
15. <i>Cyperus articulatus</i> L.	Cyperaceae	Tuber	Tonic and Stimulant
16. <i>Scirpus grosus</i> L.f.	Cyperaceae	Tuber	Diarrhoea and Vomiting
17. <i>Jussiaea repens</i> L.	Onagraceae	Whole plant	Skin disease, Ulcer
18. <i>Nymphoides indica</i> (L.) Kuntz.	Gentianaceae	Whole plant	The plant is used an substitute for chiratta in fevers and jaundice
19. <i>Hydrolea zeylanica</i> (L.) Vahl.	Hydrophyllaceae	Leaf	Antiseptic, Ulcer

Data were gathered randomly from literature and personal interviews

name, locality, traditional uses including ethno - veterinary application etc.

### Materials and Methods

An ethnobotanical survey was undertaken to collect information from traditional healers on the use of aquatic medicinal plants in South 24 parganas district of West Bengal. The indigenous knowledge of local traditional healers [Santals and some displaced families from Bangladesh] and the

native aquatic plants used for medicinal purposes were collected through questionnaire and personal interviews during field trips. This study showed that many people in the studied area of South 24 Parganas district still continue to depend on medicinal plants at least for the treatment of primary healthcare. Plants were identified with the help of some local floras (Cook, 1990, 1996; Naskar, 1986, 1990; Prain, 1905; Samanta and Das, 2003; Shankar and Mishra, 2012).

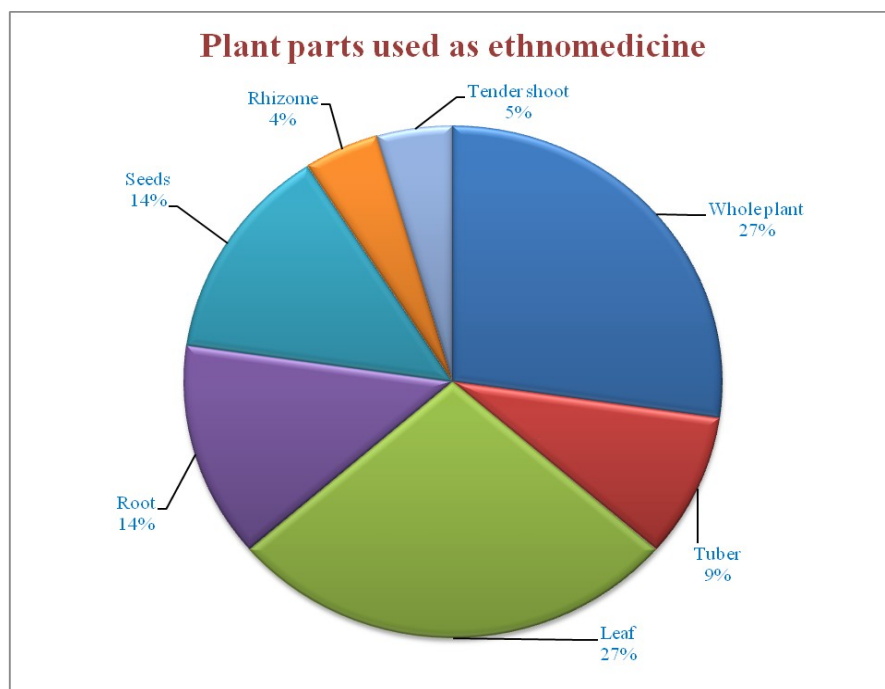


Figure 2: Conspectus of Plant Parts used for treating ailments

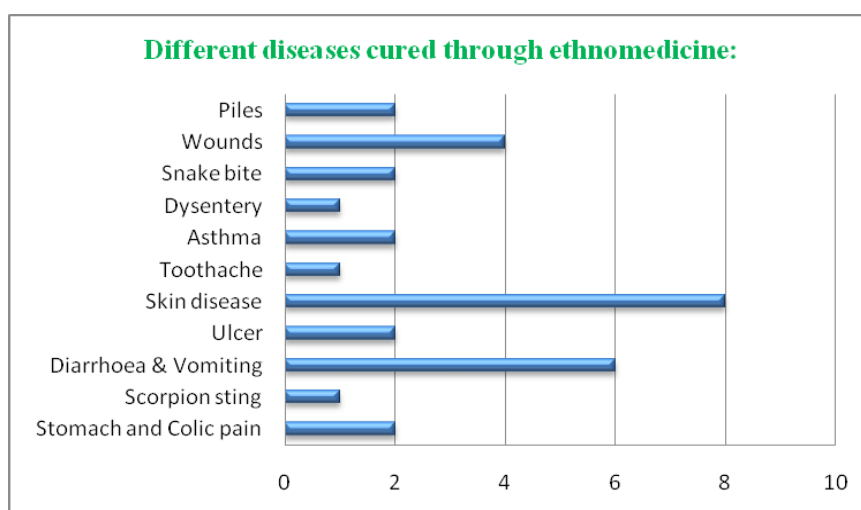


Figure 3: Different diseases cured through ethnomedicine

### Study area

The district is bounded by the latitudes 22°33'45" N and 21°29'00" N and longitudes 89°4'50" E and 88°3'45" E. The total geographical area of the district is 9960 sq. km. It has 5 Sub-divisions consisting of 29 Block, 29 Panchayat Samities and 26 Police Stations. There are 312 Gram Panchayats with 4324 villages. Alipore is the headquarters of the district. The district is located in the mature tract of Gangetic delta in Lower Ganga basin. Hugli, Matla, Bidyadhari, Raimangal, Saptamukhi rivers with their tributaries/distributaries form the main drainage in this district (Figure 1; Table 1).

### Climate

The district is characterized by hot and humid climate. It receives adequate rainfall from North-East and South-West monsoons which set in the

later half of June and withdraw by the middle of October. Pre-monsoon rains are received during March-April.

### Temperature

The climate of South 24 Parganas is monsoonal type. The annual range of temperature varies from 13°C to 40°C. May is the hottest month with temperature as high as 40°C and January is the coldest month with temperature as low as 10°C.

### Rainfall

The normal annual rainfall in this district is of the tune of 1800 mm. Lower littoral part receives high rainfall which gradually decreases towards the northwest (Table 2).



**Table 4: List of aquatic plants with other ethnobotanical uses**

Name	Family	Ethnobotanical uses
<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	It is National flowers and is treated as a sacred flower. Hindus offer it in many religious occasions. Flowers are used in Hindu and Buddhist temples for the worship and religious purposes. Pickles prepared from the petioles. The leaves are occasionally used as food plates. Rhizomes, seeds, leaves are occasionally used as vegetable.
<i>Neptunia oleracea</i> Lour.	Mimosaceae	Young shoot of the plant is used as pot herb.
<i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	The plant is a good fodder and rich in protein. Grass carp relishes the plants. Fried plant is also good manure Good oxygen producer and used as decorative aquarium plant
<i>Monochoria hastata</i> (L.) Solms	Pontederiaceae	Tender stalk and leaves are eaten as vegetable. Rootstocks are used as food for cattle and pigs.
<i>Nymphoides indica</i> (L.) Kuntze	Menyanthaceae	Plants are eaten as vegetable. Plants are eaten as vegetable.
<i>Vallisneria spiralis</i> L.	Hydrocharitaceae	Young leaves eaten as salads. Largely it is used in domestic aquaria and it has great capacity in purifying water, so fish culture is helped directly or indirectly.

Data were gathered randomly from literature & personal interviews

## Soil

The district has three types of soils-

**I. Younger alluvial soil:** The Younger alluvial is predominant in the northern and eastern parts of the district, being mainly characterized by flood plains of numbers of small rivers in the deltaic part.

**II. Coastal alluvial soil:** The coastal alluvial soil is mainly observed in the southern part of the district.

**III. Saline and saline alkali:** The extreme southern margin of the district is covered with saline and saline alkali soil of coastal origin.

## Results and Discussion

The investigation revealed that, the traditional healers used 19 species of plants distributed in 16 genera belonging to 14 families to treat various diseases (Table 3, 4). The documented medicinal plants were mostly used to cure skin diseases, poison bites, stomachache, ulcer, dysentery, diarrhoea and piles. In this study the most dominant family was Polygonaceae. The study also shows that the leaves (27%) and whole plant (27%) were most frequently used for the treatment of different types of diseases. The next important part of the plants were used to treat different diseases as follows: Roots (14%), Seeds (14%), Tubers (9%), Tender shoots (5%), and Rhizome (4%) (Figure 2).

According to the local people, *ojhas*, and rural health workers as many as 60% of the district's people depend on traditional medicine for their primary healthcare needs. Due to less communication means, poverty, and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common ailments. This study also shows that tribal populace have been used the aquatic plants of this district in mainly for the treatment of skin diseases, diarrhoea and vomiting and also for the wounds along with some other diseases like poison bites, stomachache, ulcer, asthma, toothache and piles (Figure 3).

## Conclusion

This study showed that many people in the studied areas of South 24 Parganas district still continue to depend on local medicinal plants at least for the treatment of primary healthcare and some of which are of aquatic origin.

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